Virus and calcium: an unexpected tandem to optimize insecticide efficacy

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Résumé en anglais	The effective control of insect pests is based on the rational use of the most efficient and safe insecticide treatments. To increase the effects of classical insecticides and to avoid the ability of certain pest insects to develop resistance, it is essential to propose novel strategies. Previous studies have shown that calcium-dependent phosphorylation/dephosphorylation is now considered as a new cellular mechanism for increasing the target sensitivity to insecticides. Because it is known that virus entry is correlated with intracellular calcium concentration rise, this report attempts to present the most important data relevant to the feasibility of combining an insect virus such as baculovirus or densovirus with an insecticide. In this case, the insect virus is not used as a bioinsecticide but acts as a synergistic agent able to trigger calcium rise and to activate calcium-dependent intracellular signaling pathways involved in the increase of the membrane receptors and/or ion channels sensitivity to insecticides. This virus-insecticide mixture represents a promising alternative to optimize the efficacy of insecticides against insect pests, while reducing the doses.
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